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ABSTRACT

This report presents the results of a study examining the effects of rapidly rising tuitions at the nation's "elite" private colleges and universities, and the impact on the enrollment of middle-income students. The paper traces the income background of Consortium on Financing Higher Education (COFHE) schools and shows how students from backgrounds that are middle income and below have weathered the recent period of tuition increases. Shifts in the income distribution of students at COFHE institutions are compared with those of students at other institutions. In addition, a sample of high-achieving high school students is analyzed to examine how application, admission, and matriculation rates at COFHE institutions vary by income group. The report discusses the destinations of top high school students who either turn down an "elite" school or never apply to one, and the same sample of students is used in an analysis of how the net price of attending a COFHE institution varies with income. Finally, the attitudes of parents of top high school students who did not apply to a COFHE school are studied to determine how much these parents believed a COFHE institution would cost them; these are compared to actual costs. Contains eight references and an appendix of income statistics. (GLR)

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Tracing the Economic Backgrounds of COFHE Students: Has There Been a "Middle-Income Melt"?

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Principal Findings

- Data from two COFHE data bases show that over the last decade the percentage of students from middle income families at our institutions has declined.

- National data show, however, that a substantial proportion of this decline is due to the decrease of such families in the society at large. Moreover, public universities have experienced decreases in students from middle income families that parallel the changes at the COFHE institutions. On the other hand, public colleges have gained middle income students, relative to both COFHE institutions and public universities.

- A national sample of students with high PSAT scores shows that students from middle income families have slightly depressed rates of application to COFHE institutions compared with what would be predicted from the general relationship between income and application behavior. Middle income applicants are slightly less likely to be admitted to such institutions than are their peers from higher and lower income families. Furthermore, when they are admitted, middle income students are the least likely of any of five income groups to matriculate at a COFHE school.

- While COFHE's admitted students who do not matriculate in a COFHE institution tend to enroll in other private schools, students with high scores who do not apply to a COFHE institution tend to enroll in the public sector. Non-applicants from upper-middle income families appear disproportionately likely to enroll in elite public universities.

- An examination of prices paid by families relative to their incomes for COFHE matriculants shows that the income burden tends to fall with increases in income. The middle income students in our sample were not paying an extraordinary percentage of their families' income in order to attend these institutions.

- Evidence provided by parents of students who do not apply to a COFHE school suggests that middle income families are especially prone to overestimating how much they would have to pay to enroll their children in a COFHE institution; parents in the $60-70,000 group overestimated their costs by 18 percent beyond what families in that income group report that they pay at COFHE institutions.

Rapid tuition increases at private "elite" institutions over the past decade have led to worries that these schools are too expensive for certain groups of students. The median tuition has increased 196 percent since 1978 at schools belonging to the Consortium for Financing Higher Education (COFHE), a group comprised of many of the most selective private institutions in the nation (COFHE, 1979 and 1989).[1] It is often suspected that middle income students -- not those from lower income backgrounds -- comprise the group that is most affected by these price increases and that these students are being driven away from our highly-selective, highly prestigious colleges and universities.[2] Students from low income backgrounds qualify for need-based financial aid, so tuition increases are likely to be met by similar increases in aid, lessening the chance that these students will experience an affordability problem. Students from

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[1]COFHE is a research group containing 32 members (30 in 1978) that includes most of the institutions widely identified as the "elite" colleges and universities in the United States, including the Ivy League universities and selective coeducational and womens colleges. During the same period the Consumer Price Index climbed 90 percent and median income of families with heads aged 45-64 rose 94 percent.

[2]These discussions often refer to "middle class" families and "middle class melt." We use the term middle income because we only have income data, not data on education and occupation which, along with income, help define the middle class in sociological terms. Indeed, one of the interesting questions pertaining to the issues that we are examining is whether the social status of the middle income group is shifting over time--does this group, for example, consist of a higher proportion of dual-income, skilled laborers and fewer professionals with higher education? Such a shift could account for any observed changes in the college choice patterns, independent of economic considerations (the authors thank Rena Cheskis-Gold for calling our attention to this possibility via personal communication).

financial aid -- parental contributions that do not require major proportions of available annual incomes for college costs. But the situation for middle income students is different. In addition to less certain aid prospects than these other groups, middle income families may have experienced a levelling of income growth recently. The economic gains they had been able to realize by increasing the number of wage earners in a family (that is, entrance into the labor force of spouses who had been homemakers) cease once these families achieve full employment of spouses. These gains are also constrained as salary growth in general moderates. Furthermore, middle income families possess assets that reduce financial aid packages. It is usually the case that these assets (homes, family cars, retirement savings, and the like) are illiquid, so that a price squeeze may result as increases in financial aid do not keep pace with increases in tuition. As tuitions rise faster than other economic indicators (Hauptman 1990), students from middle income backgrounds may be forced to switch to less costly educational alternatives.

Some observers claim that a "melt" has already occurred. In a recent Washington Post article, Robert Kuttner (1989, pg. A23) wrote, "statistics show that children from moderate-income families are indeed being driven away from private colleges." Lionel Lewis and Paul Kingston (1989) point to "a small decrease in recent years in the ability of low- and middle-income students to pay for an elite private education" (pg. 32) and argue that the proportion of students from affluent families grew at a

the proportion of students from affluent families grew at a faster rate in the 1980s at the private highly selective institutions than at undergraduate institutions in general. Thus, they argue that not only is the share of high income students much larger at the "elite" institutions, the differential between the "elites" and the rest of U.S. higher education is growing.

In this paper, by tracing the income backgrounds of students at COFHE schools, we show in section 2 how students from backgrounds that are middle income and below have weathered the recent period of marked tuition increases. We then compare shifts in the income distribution of students at COFHE institutions with those of students at other types of institutions. Does it appear that students from certain income backgrounds are being priced out of our most selective private institutions? In section 3, a sample of high-achieving high school students is analyzed to examine how application, admission, and matriculation rates at COFHE institutions vary by income group. We discuss in section 4 the destinations of top high school students who either turn down an "elite" school or never apply to one. Again, our aim is to examine how college choice may be affected by price for different income groups. Section 5 uses the sample of top high school students in an analysis of how the net price of attending a COFHE institution varies with income. Here, we compute an income burden measure -- the ratio of net price to income. Is it true, as the speculation holds, that middle income families face a higher ratio of net price to income at "elite" institutions

than that faced by poorer or richer families? We also examine how much the parents of top high school students who do not apply to one of the COFHE institutions believe it would cost them at such a school, and we compare their perceptions with what it will cost the families of COFHE matriculants who are in similar financial circumstances. Do the parents of these students tend to underestimate the amount of aid available to them at "elite" institutions, particularly parents in middle income families, thereby overestimating the net price of attendance at these colleges and universities? Our conclusions are in section 6.

Table 1 presents information on the income backgrounds of COFHE students based on student-reported data from the American Freshman Survey for 1978 and 1989. These data are derived from 13 COFHE institutions that participated in this annual survey in both of these years.[3] A more detailed set of data are presented in Appendix A, Table 1, where we use six categories for each of the two years that represent constant-dollar income bands (there are only three categories in Table 1). The 1989 income bands closely approximate constant-dollar equivalents for those used in 1978 (the United States experienced 90 percent inflation during this period), but they are not exact adjustments because we are

[3]Although universities predominate in COFHE (18 out of 32 members), the participants who provided data from the American Freshman Survey are primarily colleges (9 of the 13).

Table 1

Income backgrounds of COFHE and other students: American Freshman Survey Data

	1978				1989			
	N	Below Middle Income	Middle Income	Above Middle Income	N	Below Middle Income	Middle Income	Above Middle Income
Income Bands ($1,000s):		< 20	20-30	> 30		< 40	40-60	> 60
					[1978 dollars:	< 38	38-57	> 57]
COFHE	6,839	21%	22%	57%	7,443	21%	18%	60%
COMPARATIVE INCOME DISTRIBUTIONS								
NATIONAL INCOME DISTRIBUTION OF FAMILIES WITH HEADS AGED 45-64 1979 Values:		39%	27%	34%	1989 estimates: (see text)	47%	25%	28%
AMERICAN FRESHMAN SURVEY DATA								
all institutions:		50%	26%	24%		48%	25%	27%
4-yr private, non-sectarian colleges:		44%	24%	32%		39%	22%	39%
4-yr public colleges:		52%	27%	21%		49%	27%	24%
private universities:		31%	23%	46%		27%	21%	52%
public universities:		39%	29%	32%		39%	26%	35%

constrained by the response categories printed on the questionnaires. At our most disaggregated level, the real-dollar income groupings are:[4]

[4]As indicated in Appendix A, Table 1, more precise inflation-adjusted categories in 1989 would be: less than $19,000, $19,000 - $38,000, $38,000 - $57,000, $57,000 - $76,000, $76,000 - $95,000, and above $95,000.

	1978	1989
Low income	Less than $10,000	Less than $20,000
Lower-middle	$10-19,999	$20-39,999
Middle	$20-29,999	$40-59,999
Upper-middle I	$30-39,999	$60-74,999
Upper-middle II	$40-49,999	$75-99,999
Upper income	$50,000 or more	$100,000 or more

If we simply look at the three broad groups of students presented in Table 1 -- below middle income (the sum of low income and lower-middle income), middle income, and above middle income (the sum of upper-middle income I and II and high income) -- changes between 1978 and 1989 are relatively minor. The share of middle income students falls from 22% to 18%, while the share below middle income stays at 21% and the share above middle income rises from 57% to 60%.[5]

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[5]Given the considerable stability over the period in enrollments at COFHE schools and at the other institutional groups discussed below, a decline in the middle income share represents a decrease in the absolute number of middle income students, and a percentage decline that is more rapid than at other institutions signifies a decrease in the share of all middle income students who are enrolled at that group of schools. While, for purposes of exposition, the discussion is mainly in terms of percentage point changes, our examination of percentage changes in the proportion that a given income group represented among COFHE freshmen found that the main findings were not altered in a significant way.

Data in Appendix A, Table 1 show that the proportion of students in the middle income and upper-middle income I categories ($20,000 to $40,000 in 1978, $40,000 - $75,000 in 1989) fell substantially from 39% in 1978 to 31% in 1989. While this income grouping in 1989 is somewhat truncated, the difference between the inflation-adjusted range of $38,000 - $76,000 and the actual range of $40,000 - $75,000 is small, particularly given the probability that a student who thinks his family's income is between $38,000

We need to compare what has been going on in COFHE schools with changes in the national income distribution as well as the experiences of other types of institutions in order to understand whether the income distribution of students in "elite" institutions has changed differentially during this period of relatively high tuition increases. We first compare national income distribution data over the period for families with heads aged 45-64 (the source of the majority of college students). Using federal government data from 1979 (1978 data are only available with income breaks that have little in common with the six categories in Appendix A, Table 1), and comparing these numbers with estimated values for 1989, we find an increase in the proportion from below middle income families of 8 percentage points, a decline in the middle income proportion of 2 percentage points, and a decrease in the proportion above middle income of 6 percentage points.[6]

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and $40,000 would round up and choose the $40,000 - $59,999 category rather than $20,000 - $39,999. On the other hand, the share of students in the upper-middle income II and high income categories (above $40,000 in 1978, above $75,000 in 1989) rose from 39% in 1978 to 47% in 1989. Here, the change in income category closely approximates the rate of inflation.

[6]The most recent data are for 1987 where the national income distribution (using the 1989 income classifications) was low income-22.1%; lower-middle income-31.5%; middle income-24.0%; upper-middle income I-9.7%; the sum of upper-middle income II and high income-12.7%. We look at changes in income distribution between 1985, 1986, and 1987, and extrapolate the 1987 figures up to 1989 to produce our 1989 estimates. Income distribution data are from U.S. Bureau of the Census, Current Population Reports, Series P-60, Money Income of Households, Families, and Persons in the United States. U.S. Government Printing Office, Washington, DC.

Data from the national norms generated by the American Freshman Survey show that in all institutions, the proportion below middle income fell by 2 percentage points, the middle income proportion fell by 1 percentage point, and the proportion above middle income, therefore, rose by 3 percentage points. Thus, the decline in the proportion of middle income students at all institutions reflects the decline in the proportion of middle income families in the nation.[7]

A substantial amount of the apparent "melt" of middle income students from COFHE's entering classes can be accounted for by a disappearance of such students from college campuses in general. Comparing the decline in middle income students at COFHE institutions with the decline at all institutions shows that 33% of COFHE'S loss of middle income students reflects the decreasing number of middle-income college-bound high school seniors in the national pool.[8] The remaining 67% of the total drop in COFHE's middle income students represents a true "melt" of middle income students who are now going to non-COFHE schools.[9]

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[7]Appendix A, Table 1 shows that the decline in the two figures is much closer than appears in our rounded data -- for all institutions it was 1.5 percentage points (a 5.7% decline) and for the national figures it was 1.7 points (a 6.3% decline).

[8]The 33% figure is based on a decline of 5.7% in the proportion of middle income students at all institutions divided by the 17.3% decline in the middle income share at COFHE.

[9]Another set of student-reported national data on students' family income is the Admissions Testing Program (ATP) of the College Board. ATP data are broader in one respect than the American Freshman Survey data and narrower in another. The data come primarily from high school seniors, but also from juniors (and a few sophomores) who take the SATs or the Achievement Tests. They

Benchmark data from the American Freshman Survey for other groups of schools indicate, however, that the "elite" COFHE institutions are not alone in losing students from middle income backgrounds over the 1978 - 1989 period. If middle-income melt means that COFHE institutions are pricing themselves out of the market, the changes in the income distribution at COFHE schools should be more dramatic than at less costly alternatives, such as public universities. Yet, the experience at public universities basically mirrors that of COFHE: there has been a decline of 3 percentage points in the proportion of students at public universities from families in the middle income group; a constant proportion of students below middle income; and a consequent increase of 3 percentage points in the proportion from above middle income. While it is true that COFHE students are disproportionately upper income compared to students at public universities (with 60% of COFHE students above middle income ($60,000 and over) in 1989 compared with 35% at public universities), it is also true, and contrary to conventional wisdom, that the differential has been roughly stable -- it is not growing. Specifically, the difference in the proportion of middle income

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also disproportionately come from the west and east coasts. The latter markets are precisely the markets from which COFHE institutions draw a majority of their students. We have focused on the American Freshman Survey data because our COFHE data come from that source. The ATP data do show (Appendix A, Table 1), however, that between 1978 and 1989, the proportion of SAT takers below middle income was about constant at 53% (the decline was less than half a percentage point), the middle income proportion fell by 1 percentage point, and the proportion above middle income rose by less than 2 percentage points.

students at COFHE versus public universities rose only slightly from a shortfall of 7 percentage points to 8 percentage points, while the difference in the proportion of students above middle income held steady at 25 percentage points.[10]

It is interesting to note that while both COFHE schools and public universities lost a larger proportion of middle income students than the decline that took place within the general population of students at institutions of higher education, the proportion of students at 4-year public colleges who were from middle income backgrounds was unchanged over the period (27%). The stability in middle income representation at these latter institutions in the face of a declining percentage of middle income students in the general population of American freshmen suggests a movement of middle income students -- a "melt" -- from private institutions (both COFHE and non-COFHE) and public universities to public colleges. Thus, while changes in the income backgrounds of COFHE students over time mirror changes at public universities, a group of institutions that are <u>much</u> lower priced alternatives to "elite" private institutions -- the public colleges -- are gaining middle income students from other types of institutions.

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[10]What about a comparison in terms of the more striking change in the proportion of students in the middle income and upper-middle income I categories? Data presented in Appendix A, Table 1 show that at public universities, this proportion fell from 46% to 39%, a bit less than the 39% to 31% decline at COFHE institutions. The proportion of students in the upper-middle income II and above categories rose from 16% to 22% at public universities, again approximating the increase from 39% to 47% at COFHE schools.

We wondered if these findings were sensitive to either the particular years in question or to the data set used. Table 2 summarizes the detailed data contained in Appendix A, Table 2 on the income backgrounds of another set of COFHE students -- seniors who graduated in 1982 and in 1989. These data are from the COFHE Senior Survey. We have information from students at 25 COFHE institutions in 1982 and 15 in 1989.[11] At our most disaggregated level, the income ranges in the 1982 questionnaire dictate a partition into constant-dollar income groups as follows:[12]

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[11]In addition to acting as a consistency check on income changes for all students, these data allow us to examine income changes for specific gender, racial and ethnic groups at COFHE schools. Only six institutions produced representative samples in both years. Thus, differences in the two years could be due to the participation of different institutions with different family-income distributions. We checked the data for these six institutions and the results were very similar to those we found in the more inclusive data sets. For example, the decline in the share of middle income students for the group of six was 8.4 percentage points versus 8.9 percentage points in the complete data set. We use the more inclusive set of data because the number of minority students drops too much to permit analysis by income grouping in the smaller data set. These racial/ethnic data have to be considered only as suggestive, however, because of the chance that the income distributions of the minority students in the different sets of institutions may differ independent of the effects of the "melt" phenomenon that we are investigating.

[12]Inflation between 1982 and 1989 was about 29%, making the inflation adjusted income categories in 1989 (indicated in Appendix A, Table 2) as follows: less than $23,000, $23,000 - $39,000, $39,000 - 65,000, $65,000 - $97,000, and greater than $97,000.

Table 2

Income Backgrounds of COFHE and Other Students: COFHE Data from the Senior Survey

	1982				1989			
	N	Below Middle Income	Middle Income	Above Middle Income	N	Below Middle Income	Middle Income	Above Middle Income
Income bands ($1,000s):		< 30	30-50	> 50		< 40	40-60	> 60
					[1982 dollars:	< 39	39-65	> 65]
COFHE	7,546	23%	27%	50%	7,896	20%	18%	63%
COFHE BY GENDER								
male	3,485	23%	28%	50%	3,301	18%	18%	65%
female	4,061	24%	25%	51%	4,595	21%	18%	61%
COFHE BY RACE/ETHNIC GROUP								
asian	361	40%	26%	34%	654	26%	17%	57%
black	273	44%	31%	25%	408	43%	22%	35%
hispanic	178	46%	27%	28%	268	48%	16%	36%
white	6,734	21%	26%	53%	6,566	17%	17%	66%

COMPARATIVE INCOME DISTRIBUTIONS								
NATIONAL INCOME DISTRIBUTION OF FAMILIES WITH HEADS AGED 45-64		53%	30%	17%	1989 estimates: (see text)	47%	25%	28%
AMERICAN FRESHMAN SURVEY DATA								
all institutions:		54%	31%	15%		48%	25%	27%
4-yr private, non-sectarian colleges:		47%	29%	24%		39%	22%	39%
4-yr public colleges:		59%	31%	10%		49%	27%	24%
private universities:		33%	31%	36%		27%	21%	52%
public universities:		43%	36%	21%		39%	26%	35%

	1982	1989
Low income	Less than $18,000	Less than $20,000
Lower-middle	$18-29,999	$20-39,999
Middle	$30-49,999	$40-59,999
Upper-middle	$50-74,999	$60-99,999
Upper income	$75,000 or more	$100,000 or more[13]

The summary data in table 2 show that in 1982, 23% of the COFHE seniors who responded to the Senior Survey were from families below middle income, 27% were from middle income families, and 50% were from families with above middle income. By 1989, the proportion below middle income fell by 3 percentage points, the middle income proportion fell by 9 percentage points, and, consequently, the proportion above middle income rose by about 12 percentage points (rounding in the table produces a value of 13 percentage points).

While the pattern for whites mirrors the total (whites comprise 89% of the sample in 1982 and 83% of the sample in 1989), other racial/ethnic groups had very different experiences. The movement in income distribution for Asian students was much more dramatic than for the sample as a whole -- a 14 percentage point decline in the proportion below middle income, a 9 percentage point decline in the middle income proportion, and a 23

[13]Disaggregated income categories in 1989 (Appendix A, Tables 1 and 2) are identical, except that Senior Survey data no longer allow us to divide upper-middle income into two sub-groups.

percentage point increase in the proportion above middle income. Blacks and hispanics, on the other hand, experienced virtually no changes in the proportions below middle income, although the middle income proportions fell by around 10 percentage points.

In sum, all groups experienced precipitous declines in the amount of middle income representation between 1982 and 1989. Whites also lost some of their students below middle income while Asians lost a far greater amount, and blacks and hispanics maintained the percentages of their students from families below middle income.[14]

National income distribution data and data from other institutions again provide a context in which we can judge the distinctiveness of income redistribution in the "elite" institutions. Comparing figures from 1982 with our 1989 estimates, we find that the proportion of students from below middle income fell by 6 percentage points, the middle income proportion fell by 5 percentage points, and the above middle income proportion rose

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[14]Part of the apparent change over time may reflect the fact that the 1989 definition of middle class is more restricted than the inflation adjusted category (we are forced to use $40,000 - $59,999 versus $39,000 - $65,000), but the fact that the percentage of lower-middle income students (Appendix A, table 2) falls despite the use of an income category that is larger than the inflation adjusted category ($20,000 - $40,000 versus $23,000 - $39,000) and the percentage of high income students rises despite the use of an income category that is smaller than the inflation adjusted category ($100,000+ versus $97,000+) implies that these changes are not a statistical aberration. It should be noted further that these data differ from the freshman data by including the possibility that the observed results could be due to interactions between income and matriculation (which is all that is captured in the freshman surveys), or between income and attrition, or both. The data do not permit disentangling these two effects.

by 11 percentage points. The decline in middle income students at all institutions of higher education in the freshman survey is somewhat more severe than changes in the national income distribution during this period.[15] The decline of 6.5 percentage points (20.9%) in the proportion of middle income students at all institutions compares with a decline in the proportion of middle income families in the nation of 4.4 percentage points (14.9%). As far as a comparison between the COFHE experience and that at other institutions, it is unfortunate that we only have data for freshmen (rather than seniors) for the corresponding years. Nevertheless, they do provide some comparative perspective.

Changes in income backgrounds at all institutions in the American Freshman Survey were as follows: a 6 percentage point decline in the proportion of students below middle income; a 6

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[15]This difference between the national income data and the freshman survey data, and the more pronounced shifts in income distribution between the 1982 and 1989 surveys than between the 1978 and 1989 surveys, could be in part an artifact of the way the question was worded on the respective freshman survey questionnaires. Each of the survey forms has fourteen income categories on it, although the definition of each response category shifts over time to account for inflation. In 1978 and in 1989, the income band that we use as "middle income" is derived from two response codes which were the 9th and 10th codes listed on the questionnaire; in 1982, our middle income group comes from three response codes which were the 10th, 11th, and 12th on the questionnaire. The reflection of these greater differences for the 1982-89 comparisons than for the 1978-89 comparisons in the national income data, however, suggest that the differences observed in the freshman survey data are not an artifact of the change in response categories. Furthermore, to the extent that students who do not know their family incomes tend to pick answers toward the middle of the scale (assuming that most college student think of themselves as "middle income"), the shift in the categories should have depressed our "middle income" percentages for both COFHE and the other institutional comparisons in 1982 (compared with 1978) instead of increased them.

percentage point decline in the proportion of middle income students; a 12 percentage point rise in the proportion of students above middle income.[16] Comparing the decline in middle income students at COFHE institutions with the decline at all institutions shows that almost two thirds (62%) of the total loss in middle income students reflects the disappearance of college-bound high school students in the middle income range.[17] The remaining 38% of the total drop in the middle income proportion represents middle income students who are going to non-COFHE schools.[18]

Benchmark data from the American Freshman Survey for other types of schools once again indicate that COFHE schools are not alone in losing students from middle income backgrounds during the 1980s. There has been a decline of 4 percentage points in the proportion of students at public universities from families below middle income, a decline of 10 percentage points in the middle income proportion, and a consequent increase of 14 percentage points in the proportion from above middle income.

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[16]Due to rounding in the two percentages, the 6.5% decline noted above appears as 6 percent points here; the original data carried one decimal place.

[17]The 62% figure is based on a decline of 20.9% in the share of middle income students at all institutions divided by the 33.6% decline in the middle income share at COFHE.

[18]Data on the income backgrounds of SAT takers (Admissions Testing Program Data in Appendix A, Table 2) indicate significant changes during the period. Between 1982 and 1989 the share of SAT takers below middle income fell by 5 percentage points, the middle income share fell by 4 percentage points, and the share above middle income rose by 9 percentage points.

Hence, the difference in the proportions of middle income students at the two types of institutions slipped from 9 percentage points (with the lower proportion at COFHE) to 8 percentage points, while the difference in the percentage of students above middle income fell from 29 points to 28 (with the higher proportion at COFHE). To put it another way, the substantial increase in the proportion of COFHE students from families above middle income (from 50% to 63%) in a period of seven years is less dramatic than the increase at public universities from 21% to 35%.[19] At four-year public colleges, on the other hand, the decline of 4 percentage points (a 12.4% decline) in the proportion of middle income students was much smaller than at either COFHE schools or public universities, or for all institutions, once again indicating a movement of students into this sector.[20]

The conclusions from tables 1 and 2 are that: (1) students at COFHE institutions in 1989 are from families with higher real incomes than in the preceding decade or so; (2) students at COFHE institutions are much more affluent than at other institutions of higher learning; (3) the differential in income between COFHE students and students at public universities has been relatively constant over the period, and may even be narrowing recently.

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[19]It should be noted that while the absolute increase in the proportion of above middle income students is only slightly greater at public universities than at COFHE schools, the percentage increase at COFHE schools was only 25% compared with a remarkable 68% at public universities.

[20]As was true over the longer period, the decline in the middle income share at public colleges was also less than the decline in the middle income share in the national income distribution.

Our confidence in these findings is bolstered by observing similar patterns in two different sets of data covering two different periods of time.

While the first two conclusions are well-known, the third is not. These data clearly challenge the assertion that the increasing divergence over the past decade between sticker prices at COFHE institutions and at their most likely competitors -- public universities -- has led to an exodus of middle income students from COFHE institutions to this lower-priced educational alternative.

-3-

While these "elite" private institutions are not experiencing a <u>differential</u> middle income melt relative to public universities, COFHE schools are nonetheless losing students from the middle ranks of the income distribution (compared with changes in the national income distribution and changes at all institutions of higher learning). Another data set allows us to look in more detail at how and why COFHE schools lose potential students from middle income families.

A survey of high school students with high PSAT scores was carried out in 1987.[21] We have divided these students into five income groups:

low income	less than $20,000
lower-middle income	$20,000 - 39,999
middle income	$40,000 - 59,999
upper-middle income	$60,000 - 89,999
high income	$90,000 and above

Table 3 shows that about 27% of the entire sample of 3,400 students was in the middle income group, with 32% below middle income (aggregating the low income and lower-middle income categories) and 40% above (aggregating the upper-middle income and high income categories). The income distribution of those top students who elected to apply to at least one COFHE school (45% of the sample) differs from that of the entire group of top high school students. The percentage of applicants in the middle income group is 23% (compared to 27% in the entire sample), the percentage below middle income is 26% (compared to 32%), and the percentage above middle income is 52% (compared to 40%). Most striking is an increase in the proportion of high income students from 19% in the entire sample to 30% for those students applying to a COFHE institution. The income distribution becomes even

[21]The survey was carried out in June, 1987 by Educational Testing Service for Richard Spies of Princeton University (Spies 1990) with funding by The College Board and the Alfred P. Sloan Foundation.

Table 3

Income Distribution Data from a 1987 Sample of High PSAT Students

	Low Income	Lower-Middle Income	Middle Income	Upper-Middle Income	High Income	Total	
Total Sample - N	306	786	924	729	655	3,400	
Percentages	9%	23%	27%	21%	19%	100%	
COFHE Applicants - N	100	288	357	334	462	1,541	[45% of sample]
Percentages	7%	19%	23%	22%	30%	100%	
COFHE Admits - N	63	188	225	236	317	1,029	[67% of applicants]
Percentages	6%	18%	22%	23%	31%	100%	
COFHE Matriculants - N	48	134	141	156	252	731	[71% of admits, 22% of sample]
Percentages	7%	18%	19%	21%	35%	100%	
Students with SATs above 1300							
Total Sample - N	58	210	252	270	281	1,071	
Percentages	5%	20%	24%	25%	26%	100%	
COFHE Applicants - N	29	135	164	184	239	751	[70% of sample]
Percentages	4%	18%	22%	25%	32%	100%	
COFHE Admits - N	22	97	115	140	185	559	[74% of applicants]
Percentages	4%	17%	21%	25%	33%	100%	
COFHE Matriculants - N	17	73	79	103	149	421	[75% of admits, 39% of sample]
Percentages	4%	17%	19%	25%	35%	100%	
Income Bands ($1,000s):	< 20	20-40	40-60	60-90	> 90		

more skewed when the sample of students is restricted to those who were admitted to at least one COFHE school. For this group, the middle income proportion falls to 22%, the proportion below middle income falls to 24%, and the proportion above middle income rises to 54%. Finally, only 19% of the matriculants are in the middle income group, with 25% below middle income and 56% above.

In sum, we start with 27% of a sample of high-performing high school students in the middle income group, a disproportionate number (relative to other income groups) choose not to apply to a COFHE institution, a disproportionate number of the applicants are not admitted, and a disproportionate number of the admits choose not to matriculate. The proportion of below-middle income students falls at the application and admission stages, and then recovers slightly at the matriculation stage. The proportion of above-middle income students rises substantially at the application stage and increases even further at the admission and matriculation stages.[22] When the sample is restricted to the most qualified students, those students with above 1300 SAT scores, the pattern described above is reproduced: the proportion of middle income students falls at the application, admission, and matriculation stages.

Table 4 describes the data in a way that may be more illuminating. Line 3 shows that the percentage of students in a

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[22]Note that these changes result from the experience of high income students, not upper-middle income students.

Table 4

Rates of Application, Admission, and Matriculation by Income Group from a 1987 Sample of High PSAT Students

	Low Income	Lower-Middle Income	Middle Income	Upper-Middle Income	High Income	Total
Total Sample - N	306	786	924	729	655	3,400
COFHE Applicants - N	100	288	357	334	462	1,541
Application Rate	33%	37%	39%	46%	71%	45%
COFHE Admits - N	63	188	225	236	317	1,029
Admission Rate	63%	65%	63%	71%	69%	67%
COFHE Matriculants - N	48	134	141	156	252	731
Matriculation Rate	76%	71%	63%	66%	80%	71%
Matriculation Rate of Total Sample	16%	17%	15%	21%	39%	22%
Students with SATs above 1300						
Total Sample - N	58	210	252	270	281	1,071
COFHE Applicants - N	29	135	164	184	239	751
Application Rate	50%	64%	65%	68%	85%	70%
COFHE Admits - N	22	97	115	140	185	559
Admission Rate	76%	72%	70%	76%	77%	74%
COFHE Matriculants - N	17	73	79	103	149	421
Matriculation Rate	77%	75%	69%	74%	81%	75%
Matriculation Rate of Total High-SAT Sample	29%	35%	31%	38%	53%	39%
Income Bands ($1,000s):	< 20	20-40	40-60	60-90	> 90	

particular income group who apply to a COFHE school increases with income. Thirty three percent of the low income students apply, while 71% of high income students and 39% of the middle income students apply. The admission rate also varies somewhat with income: 71% of upper-middle income students are admitted; 69% of high income students; and 65% of lower-middle income students. The admission rates for middle income and low income students are only 63%. Finally, of those who are admitted, only

63% of those in the middle income group choose to matriculate, compared with almost 80% of the high income students and 76% of the low income students. In total, only 15% of the middle income students in the sample matriculate at a COFHE school, compared to 16% of the low income students, 17% of the lower-middle income students, 21% of the upper-middle income students, and 39% of the high income students. Thus, of this sample of top achieving high school students, COFHE institutions get more than twice as large a proportion of the richest students than of the middle income students (and of the low income and lower-middle income students as well).[23]

As was described above, COFHE institutions lose middle income students at each stage in the admissions process: they are substantially less likely than high income students to apply to a COFHE institution (although they are more likely than less affluent students); they are somewhat less likely to be admitted; they are much less likely to matriculate. The pattern of admission rates across income groups is interesting (it may very well

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[23]An interesting question is whether income backgrounds affect application, admission, and matriculation in 1987 in the same way as during an earlier period. Data from a similar 1976 survey of top high school students (see Spies (1978)) are used in Appendix A, Table 3, a replication of Table 4. While only 1,381 observations from the 1976 sample were present on the tape provided to us, leading to rather small cell sizes (for this reason we do not separate out students with SATs above 1300), we find the income-application relationship in 1976 to be quite similar to 1987, with application rates being a positive function of income (with a significant non-linearity at the high end of the distribution). Admission rates are "U" shaped and yield rates are highest for high income students. Finally, matriculation rates again are more than twice as high for high income students as the rates for students from families that are middle income and below.

reflect a lower representation of legacies and minority students in the middle income group), but most striking are differences in yields. The yield curve is "U" shaped, with middle income students at the bottom. The general story is the same when the sample is restricted to students with SAT scores above 1300.[24] Application rates are a direct function of income, while both admission and matriculation patterns show depressed rates in the middle of the income distribution.

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It is clear that these "elite" institutions lose a disproportionate number of top students from the middle income ranks. Where do they go instead? Do most of them go to less expensive alternatives? Table 5 looks at the matriculation decisions of students from the sample of top high school students in 1987 who were admitted to at least one COFHE school but matriculated at a non-COFHE institution. There were 298 such students, and we have matriculation information for 271 of them. A little over one-half (54%) went to a non-COFHE private institution, with the largest segment of the remaining students (18%) going to one of the "public ivys" (see note on table 5).

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[24]Although the sample was drawn on the basis of PSAT scores, ETS included SAT data on the tape they provided.

Table 5

Destinations of COFHE Non-Matriculants from a 1987 Sample of High PSAT Students

	Low Income	Lower-Middle Income	Middle Income	Upper-Middle Income	High Income	Total
ALL STUDENTS						
N	14	50	77	73	57	271
Percentage	5%	19%	28%	27%	21%	100%
Private/non-religious	43%	54%	40%	25%	39%	38%
Private/religious	21%	16%	17%	14%	14%	16%
"Public Ivys"	0%	10%	12%	30%	23%	18%
Public "Best of the Rest"*	7%	6%	5%	8%	9%	7%
Other public	29%	12%	18%	18%	12%	16%
Military	0%	2%	8%	6%	4%	5%
Total	100%	100%	100%	100%	100%	100%
STUDENTS WITH SATs ABOVE 1300						
N	5	22	34	34	31	126
Percentage	4%	18%	27%	27%	25%	100%
Private/non-religious	40%	55%	44%	24%	26%	36%
Private/religious	20%	9%	9%	21%	13%	14%
"Public Ivys"	0%	18%	15%	32%	29%	23%
Public "Best of the Rest"*	20%	5%	6%	12%	13%	10%
Other public	20%	9%	21%	9%	13%	14%
Military	0%	5%	6%	3%	7%	5%
Total	100%	100%	100%	100%	100%	100%
Income Bands ($1,000s):	< 20	20-40	40-60	60-90	> 90	

* As described in Richard Moll, The Public Ivys, (New York: Viking, 1985): the "Public Ivys" consist of the University of California system, Miami University of Ohio, William and Mary, and the Universities of Michigan, North Carolina, Texas, Vermont, and Virginia. His "Best of the Rest" consists of Georgia Tech, New College of the University of South Florida, Penn State, SUNY Binghamton, and the Universities of Colorado, Illinois, Pittsburgh, Washington, and Wisconsin.

If income were an important factor in explaining why students turn down one or more COFHE schools to enroll elsewhere, we would expect that less affluent students would be less likely to select another private institution compared with students from more affluent backgrounds. On the other hand, we would expect

that students from middle income and below backgrounds would be more likely to select top rated public institutions than their richer counterparts.

While the numbers are small, it does not appear that income plays a large role in determining whether students turn down a COFHE school to attend another private institution -- we do not find that among COFHE non-matriculants, students from more affluent families are more likely than their less-affluent peers to choose non-COFHE private institutions. In addition, students from less affluent backgrounds are not more likely to attend the most prestigious public institutions (the "public ivys" and "best of the rest") than other students. In fact, the income group that selects public institutions -- especially top public institutions -- in disproportionate numbers is the upper-middle income group (family income of $60,000-$89,999) -- where 62% of the students turning down a COFHE school select a public institution (with about two-thirds of these students enrolling in either the "public ivys" or the "best of the rest"). This is the only striking example of income appearing to matter in matriculation decisions, suggesting that, except for those students from upper-middle income backgrounds, the relatively high price at these "elite" institutions has little effect on whether students who apply to and are accepted by at least one COFHE institution eventually enroll. It is possible, however, that some students are reacting to differences in net price that result from the

discounting practices of non-COFHE schools, including both merit aid and the packaging of need-based aid.[25]

Table 6 examines matriculation decisions for 1,759 of the 1,859 students in the sample who failed to apply to at least one COFHE institution. Only 37% matriculated at a non-COFHE private institution, while 43% chose a public institution other than a "public ivy", one of the "best of the rest", or military academy. While less affluent and middle income students do not decide disproportionately to matriculate at the most prestigious public institutions (public universities), they do select other public institutions at a disproportionately high rate. Thus, while it does not appear that the expense of COFHE institutions leads to a loss of middle income students who were admitted to a COFHE institution but choose not to matriculate, it does appear that middle income students are less likely to apply to a COFHE institution, instead restricting their choice sets to less expensive institutions. When we concentrate on those students with above 1300 SAT scores, the attraction of "other public" institutions is less, but they are again a prominent destination for lower-middle income and middle income students. Upper-middle income students in this highest-ability pool, as well as in the broader sample, disproportionately select prestigious public institutions as an alternative to "elite" private education.

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[25]Very few of the COFHE schools offer merit aid (i.e., financial aid that is not based on need).

Table 6

Destination of COFHE Non-applicants from a 1987 Sample of High PSAT Students

	Low Income	Lower-Middle Income	Middle Income	Upper-Middle Income	High Income	Total
ALL STUDENTS						
N	192	472	529	381	185	1,759
Percentage	11%	27%	30%	22%	11%	100%
Private/non-religious	17%	20%	16%	13%	24%	18%
Private/religious	17%	18%	20%	19%	22%	19%
"Public Ivys"	8%	7%	9%	19%	15%	11%
Public "Best of the Rest"*	6%	8%	6%	10%	8%	8%
Other public	52%	45%	46%	37%	30%	43%
Military	1%	2%	3%	2%	1%	2%
Total	100%	100%	100%	100%	100%	100%
STUDENTS WITH SATs ABOVE 1300						
N	27	72	83	86	41	309
Percentage	9%	23%	27%	28%	13%	100%
Private/non-religious	33%	18%	22%	16%	29%	21%
Private/religious	26%	17%	12%	23%	24%	19%
"Public Ivys"	7%	14%	17%	19%	7%	15%
Public "Best of the Rest"*	7%	6%	7%	14%	12%	9%
Other public	22%	40%	37%	27%	27%	32%
Military	4%	6%	5%	1%	0%	3%
Total	100%	100%	100%	100%	100%	100%
Income Bands ($1,000s):	< 20	20-40	40-60	60-90	> 90	

* See note, table 5.

Thus, we see that college choice decisions among students who do not apply to a COFHE school (55% of the total sample and 30% of the those with SATs above 1300) are affected by income backgrounds -- upper-middle income students are drawn to the top

public institutions while middle income and below students select other public institutions in large numbers.[26]

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Information from the sample of top high school students allows us to examine the degree to which the financial burden of attending a COFHE school varies across income groups. One of the survey questions asked parents how they would finance the cost of their child's freshman year in college. For students matriculating at a COFHE school, we can compute the average of their estimates of total cost for the freshman year (the sum of tuition and fees, room and board, travel, books, and personal expenses) by parents in each of the thirteen income categories listed in table 7. These gross cost estimates (column 2) vary somewhat by income group but this variation is independent of income level at incomes below $100,000.

Column 3 reports estimates of the net price to the family -- gross cost less the amount of scholarships and grants from any source less the amount of student loans. The numbers reported in column 4 show that the family price represents slightly more than

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[26]Unlike the admitted applicants, whose qualified status has been certified, these non-applicants may well include students who would not gain admission. The disproportionate attraction of these middle income non-applicants to public institutions may reflect ignorance regarding costs, especially net costs after aid (we explore this below), relatively higher net costs than the middle class COFHE admits due to differences in aid packages received, or some other phenomenon (perceptions of psychological or social costs involved in private college attendance).

Table 7

Actual and Perceived Income Burden at COFHE Institutions

Column No.:	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	COFHE MATRICULANTS								COFHE NON-APPLICANTS AND NON-ADMITS			
Income Category	N	Gross Cost	Family Price	Family Price as % of Gross Cost	Child's Cont.	Parents' Price	Family Price as % of Income	Parents' Price as % of Gross Cost	N	Guess	Guess as % of $15000 Gross Cost	(11) - (8)
Under $10,000	14	17,554	4,939	28	1,542	3,397	99	19	32	1,684	11	-8
$10,000 - $19,999	33	17,149	4,478	26	1,499	2,979	30	17	88	3,579	24	7
$20,000 - $29,999	61	17,847	7,428	42	1,452	5,976	30	34	145	6,143	41	7
$30,000 - $39,999	71	17,999	9,511	53	1,986	7,525	27	42	170	6,591	44	2
$40,000 - $49,999	57	17,980	9,507	53	1,882	7,625	21	42	216	8,329	56	14
$50,000 - $59,999	79	18,008	11,928	66	2,091	9,837	22	55	177	9,977	67	12
$60,000 - $69,999	64	17,268	12,156	70	1,993	10,163	19	59	143	11,522	77	18
$70,000 - $79,999	57	17,725	15,202	86	2,071	13,131	20	74	76	12,008	80	6
$80,000 - $89,999	34	18,188	15,117	83	1,859	13,258	18	73	39	11,936	80	7
$90,000 - $99,999	44	17,367	14,402	83	2,238	12,164	15	70	35	12,771	85	15
$100,000 - $124,999	63	18,299	16,315	89	1,542	14,773	15	81	45	13,544	90	9
$125,000 - $149,999	41	19,013	17,786	94	2,083	15,703	13	83	12	13,458	90	7
Over $150,000	98	18,680	17,940	96	1,465	16,475	12	88	25	13,220	88	0

where: Gross Cost - Scholarships and Grants - Student Loans = Family Price
Family Price - Child's Contribution = Parents' Price

a quarter of the gross cost for students in the under $20,000 income group, about half of the gross cost for students in the $30,000 to $49,999 range, and rises to over 90% for students with family incomes above $125,000.[27] We then divide the net price families report into the reported contribution of the child (column 5) and the remainder, the parent's net price (column 6).[28] Family net price generally increases with income, reflecting the effects of need-based financial aid, and, since the child's contribution is largely independent of income level, the parents' price also tends to increase with income.

An examination of income burden -- the family price as a percent of income (column 7) -- shows that the burden tends to fall with increases in income: families with incomes below $10,000 pay roughly all their income, families with incomes between $10,000 and $39,999 pay a little less than 30% of income; families with incomes between $40,000 and $79,999 pay about one-fifth of income; the income burden falls again for families with

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[27]It is interesting to note that there are 40 students out of a total of 139 from families with incomes above $125,000 who report a non-zero value of scholarships and grants. The average reported scholarship was a little over $3,000. Many of these students are undoubtedly bringing scholarships from outside the institution with them when they enter.

[28]The categories of financial resources printed on the questionnaire included the following: your child's own earnings or savings; parental or other family resources; scholarships/grants from any source; students loans; parent loans; other. We do not know what the parents included in the "other" category, although the average of this amount for parents of COFHE matriculants was $3,000. It seems reasonable to assume that these resources were more likely to be offsets for parental than for student contributions.

incomes above $80,000, with the income burden for the richest families falling to 12%.[29]

We do not find evidence of the inverted "U" shape that some observers might expect. That is, the income burden does not rise from low income to middle income and then decline. However, it is the case that there is virtually no decline in income burden for families in the $40,000 to $79,999 range, and there is a very slight increase in burden from the income bracket beginning with $40,000 to the bracket beginning with $50,000 and again from the bracket beginning with $60,000 to the bracket beginning with $70,000. Still, it does not appear from these data that middle income parents of students attending these "elite" institutions are forced to pay an extraordinary percentage of family income. While the income burden for families in the $40,000 - $79,999

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[29]For each closed income category in the survey instrument, the mid-point is used in the denominator of the burden ratio. For the top category, more than $150,000, we use $150,000 as family income, thereby overestimating the income burden for the richest families. The number of survey respondents providing an estimate of gross cost typically exceeds the number providing an estimate of scholarships and grants, with the difference increasing with the income level (For income group number 1 (under $10,000), 93% of gross cost respondents provide scholarship information. For the other income groups, the percentages are 100%, 90%, 87%, 82%, 86%, 86%, 61%, 62%, 57%, 37%, 34% and 31%, respectively.) We assume that a non-response for the scholarship and grant question for a parent replying to the gross cost question implies a zero value for scholarships and grants. We make the same assumption about a missing value for child's contribution and the amount of student loans (again, the probability of a missing value increases with income level). Caution should be applied in interpreting the high income burden for the poorest families since this figure is affected by the attribution of a zero scholarship figure for the one response out of 14 with a missing value, the number of respondents in this income group is quite small, and there is a considerable gap between this number and those that follow.

range, for example, is over one and a half times that for parents from the richest families (over $150,000), it is less than two-thirds as great as for parents from families with incomes below $40,000. Why then does it appear, as shown earlier, that students from families in the upper middle income range ($60,000 to $89,999) who do not apply to a COFHE institution are disproportionately likely to enroll at public institutions, especially the most prestigious public universities? Perhaps they <u>think</u> that they will have to incur an extraordinary burden to attend one of the "elite" private institutions, even though this does not seem to be the case. Although the amount of scholarship aid available to families in the middle to upper-middle income range can lower the financial burden for families in this group, it is entirely plausible that these families may underestimate the amount of financial aid available to them.

A question in the survey instrument allows us to examine such potential misperceptions. Parents with a child who matriculated at a school with a total cost of less than $10,000 are asked the following question: If your child attended a college that costs $15,000 a year, how much do you believe that you as parents would be expected to pay toward that total?[30] We examine answers to this question for all families where the child was not admitted to a COFHE school, that is, families in which the child either never applied to a COFHE school or who applied but

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[30]This question was asked <u>only</u> of parents whose children matriculated at such a school.

was not admitted. Thus, we eliminate families where parents could plausibly base an answer to the net price question on a financial aid offer from a COFHE school. Column 10 presents the dollar value of the guess while column 11 presents this value as a percentage of the $15,000 gross cost. We can then compare the guess percentage with the figures in column 8, the comparable percentage reported by the parents of COFHE matriculants.[31] Column 12 presents the difference between the percentage of the gross cost estimated by the parents of the non-applicant/non-admit group and the percentage reported by the parents of the COFHE matriculants. While parents of non-applicants/non-admits in the first income category underestimate the parent's net price, parents in the other income groups overestimate the cost of attending a COFHE school (with the exception being the top income group where the guess is virtually identical to the reported net price). The degree of overestimation is fairly small for parents in the $10,000 to $40,000 range, but is considerable for parents in the $40,000 to $70,000 range. The largest

[31]Note that parents are asked to estimate their contributions when the gross price is $15,000 a year while COFHE sticker prices were over $17,000. If parents in the $20,000-$29,999 group, for example, expected to contribute around $6,100 in addition to, say, $2,000 from their children, the expected amount of financial aid would be $6,900. If we assume that the difference between $15,000 and, say, $17,000, were made up by financial aid, the parents' guess as a percentage of $17,000 would equal .36 ($6,100/$17,000). If we assume that none of the difference in prices were met by financial aid, the parents' guess as a percentage of $17,000 would be .48 ($8,100/$17,000). Instead, we assume that when parents expect to pay 41 percent of $15,000, they also expect to pay 41 percent of the actual gross cost -- in other words, we assume that parents expect to pay the same percentage of any cost over $15,000 that they expect to pay of $15,000.

percentage overestimate of the parents net price is found for those parents in the $60,000 - $69,999 range, where the parents of the COFHE non-applicants and non-admits estimate that they would pay 76.8% of the gross cost and the parents of COFHE matriculants in that income range report a parent's net price of 58.9% of the gross cost.[32] This difference of 17.9 percentage points represents an overestimate of almost $3,100, given the average gross cost for that income group found in column 1.[33]

In sum, while the "actual" income burden does not appear to be unusually high for families in the middle income to upper-middle income range, it seems that parents around this range do in fact substantially underestimate the availability of financial aid at these "elite" private institutions. It is quite plausible to assume that informing parents with incomes around $60,000 about the amount of financial aid for which they would be eligible at COFHE institutions could affect the application decisions

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[32]It is possible that the distribution of incomes within these bands differ across the COFHE matriculant and non-applicant/non-admit groups, but the band is sufficiently narrow so that any effect on net price should be minimal. It should be noted that families in the two groups do not differ systematically in either number of children or value of assets.

[33]The degree of overestimation is also fairly large at some of the higher income categories, particularly at the $90,000 to $99,999 range, but these sample sizes are much smaller than the 143 families in the $60,000 to $69,999 range, implying the need for caution in interpreting the numbers for the richer families.

Notice that even if we adopt the extreme assumption that parents in the non-applicant/non-admit group assume that any increase in gross cost above $15,000 would be covered in full by financial aid, those in the $60,000 to $69,999 would still overestimate the parent's price by over $1,300 ($11,522 minus $10,163).

of their children. The earlier finding that so many top high school students from upper-middle income families (especially those with SATs above 1300) matriculate at the top public institutions without even applying to the "elite" private institutions, may be explained, at least in part, by the overestimation of the net price faced by their parents.[34]

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As observers both on and off campus have noted, COFHE (and the selective private institutions in general) have experienced an erosion in the percentage of their students who come from

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[34]We attempted to test our findings further by developing a regression model that would predict what parents in each income group would be likely to pay and to compare these predictions with what they believe a high-priced college would cost them. Financial aid in American colleges and universities takes more into account than family income, and many families are aware of this. Family assets and number of children in college are included in the calculation of need-based aid, and ability and minority group status may be used to adjust the price to families in institutions that do not practice strictly need-based aid policies. We selected variables from the 1987 questionnaire filled out by parents of students with high PSAT scores that had potential relevance for the actual net price faced by parents and used them to estimate a regression model that predicted the parental net price reported by families in which the student was enrolling in a COFHE school. The variables were: family income, savings, home equity, number of children in college, disadvantaged minority group membership, total SAT scores, and high school rank. (As noted earlier, most COFHE school practice a need-based-only aid policy, although even at these schools, students may bring in merit aid obtained from external sources.) Although we were able to predict the amounts being paid by the parents of COFHE matriculants with considerable accuracy (the adjusted r-squared was .55 using the first four variables in the list above), the discrepancies between predicted price for the non-COFHE admits and what their parents guessed they would have to pay did not exhibit any consistent patterns.

middle income families. A broader perspective is essential, however, in order to assess the meaning of these changes. Using our constant-dollar definition, middle income families have become relatively less numerous in the economy at large. National data for other types of institutions also indicate that the pattern of middle income melt that has been observed at the COFHE institutions has also occurred at other types of institutions. Of particular interest is the existence of a very similar pattern at the public universities (as opposed to public four-year colleges). These data suggest that differences in full price for the unaided student between these two sectors do not account for the middle income melt that has been noted at the COFHE institutions. Presumably, middle income students who receive financial aid from COFHE institutions are also finding that any net cost differences between public universities and the selective, private institutions are not sufficient to induce a significant exodus toward the former. Why the public four-year colleges appear to be gaining middle income students over the COFHE institutions and the public universities is not known at this point -- although it may be due to changes in the social composition of the middle income group; the increased desire among middle income students to attend college close to home; an increase in the selectivity of public universities; or an increase in the price differential between public colleges and public universities.

Maintaining effective socio-economic diversity and avoiding socio-economic polarization is an objective of the COFHE institutions that requires a substantial presence of middle income students. Our analysis of data on high-ability high school students indicates that COFHE loses middle income students, relative to upper-income students, at each stage of the admissions process. These data also indicate that students in middle income families who were admitted to COFHE institutions do not appear to be paying a disproportionate amount of their family incomes in order to attend (compared with other income groups). At the same time, however, in our sample the parents of high-ability students with family incomes in the $60,000 to $69,999 range whose children do not apply to a COFHE institution appear distinctively likely to overestimate the amount that it would actually cost to have their children attend such a college. This may explain some of the COFHE institutions' losses of these students in the early stages of the admissions process. It does not account, however, for the erosion of middle income students who gain admission, especially the upper-middle income group. Unlike non-matriculants in other income groups who mostly go to non-COFHE private institutions (perhaps due to the influence of merit aid), the upper-middle income non-matriculant is distinctively prone to enroll in a public alternative. Presumably these families are informed about the actual net cost at a COFHE institution after aid, if any was offered, and are making their choices accordingly (or for other non-financial reasons).

In sum, COFHE has its middle income melt -- but the high-priced members of the Consortium are not alone. More effective dissemination of net cost information may help attract some middle income people into the COFHE applicant pool. But other factors also appear to be creating pressures on middle income families that deflect them from COFHE institutions. (We also suspect that the data we used may contain some unmeasured effects of merit aid that move some students out of the COFHE pipeline, both those from middle income families and from other groups.) More extensive data on the application process and on financial resources used by families are needed to refine our perspectives on these questions -- data that are not presently available.

In general, the "elite" private institutions appear thus far to have used their ample resources to provide sufficient financial aid to dampen the potential enrollment effects of the growing divergence between the price they charge and the price at public alternatives for most groups who are eligible for aid. These high-priced colleges also appear to have spent their resources effectively to create institutions that provide sufficiently greater benefits to the unaided student to make them worth their relatively high full costs. However, other private institutions may not have the resources to make such investments, and enrollments in the private sector may thereby be diminished in the future. Furthermore, in their efforts to maintain enrollments, these less well-endowed private institutions may engage in pricing practices that will compound the middle income melt that

the COFHE institutions have observed within their student bodies. Additional financial pressures on middle income families imposed by conditions in the American economy may also exacerbate the trends that we have observed to date. These are all phenomena that bear monitoring.

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Appendix A

Table 1: Detailed Income Backgrounds of COFHE and Other Students: American Freshmen Survey Data

		1978					
	N	Low Income	Lower-Middle Income	Middle Income	Upper-Middle Income I	Upper-Middle Income II	High Income
Income Bands ($1,000s):		< 10	10-20	20-30	30-40	40-50	> 50
COFHE	6839	5.8%	15.5%	22.0%	17.4%	9.8%	29.6%
COMPARATIVE INCOME DISTRIBUTIONS							
NATIONAL INCOME DISTRIBUTION OF FAMILIES WITH HEADS AGED 45-64 1979 Values:		13.6%	25.8%	26.9%	16.5%	8.4%	8.9%
AMERICAN FRESHMAN SURVEY DATA							
all institutions:		16.3%	33.8%	26.1%	12.3%	4.3%	7.0%
4-yr private, non-sectarian colleges:		14.6%	29.7%	24.0%	13.5%	5.6%	12.6%
4-yr public colleges:		18.3%	33.7%	27.1%	12.6%	3.9%	4.7%
private universities:		9.0%	21.6%	23.0%	16.5%	8.2%	21.5%
public universities:		9.8%	28.9%	29.0%	16.7%	6.4%	9.3%
ADMISSIONS TESTING PROGRAM DATA		13.7% (< 9	39.2% 9-20)	26.0%	--------21.0%--------		

		1989					
	N	Low Income	Lower-Middle Income	Middle Income	Upper-Middle Income I	Upper-Middle Income II	High Income
Income Bands ($1,000s):		< 20	20-40	40-60	60-75	75-100	> 100
[inflation adjusted 1978 income bands in 1989:		< 19	19-38	38-57	57-76	76-95	> 95]
COFHE	7443	6.3%	15.1%	18.2%	12.9%	13.6%	33.7%
COMPARATIVE INCOME DISTRIBUTIONS							
NATIONAL INCOME DISTRIBUTION OF FAMILIES WITH HEADS AGED 45-64 (1989 estimates: see text)		19.9%	27.3%	25.2%	11.5%	----16.3%----	
AMERICAN FRESHMAN SURVEY DATA							
all institutions:		15.9%	32.3%	24.6%	10.8%	7.2%	9.3%
4-yr private, non-sectarian colleges:		13.0%	26.2%	22.0%	11.7%	9.6%	17.6%
4-yr public colleges:		15.9%	33.0%	26.9%	11.5%	7.1%	5.6%
private universities:		7.6%	19.5%	20.5%	13.1%	12.7%	26.5%
public universities:		11.4%	27.3%	25.8%	13.4%	9.8%	12.1%
ADMISSIONS TESTING PROGRAM DATA		16.8%	35.7%	24.9%	--------22.7%--------		

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Table 2: Detailed Income Backgrounds of COFHE and Other Students: COFHE Data from the Senior Survey

	1982						1989					
	N	Low Income	Lower-Middle Income	Middle Income	Upper-Middle Income	High Income	N	Low Income	Lower-Middle Income	Middle Income	Upper-Middle Income	High Income
Income Bands ($1,000s):		< 18	18-30	30-50	50-75	> 75		< 20	20-40	40-60	60-100	> 100
[inflation adjusted 1982 income bands in 1989:								< 23	23-39	39-65	65-97	> 97]
COFHE	7546	7.7%	15.5%	26.5%	22.2%	28.1%	7896	5.5%	14.3%	17.6%	26.0%	36.6%
COFHE BY GENDER												
Male	3485	7.0%	15.7%	27.8%	20.6%	28.9%	3301	5.1%	12.6%	17.6%	25.8%	38.8%
Female	4061	8.3%	15.3%	25.4%	23.6%	27.5%	4595	5.8%	15.5%	17.5%	26.1%	35.0%
COFHE BY RACE/ETHNIC GROUP												
Asian	361	17.2%	23.0%	25.5%	16.3%	18.0%	654	8.7%	17.4%	17.3%	24.3%	32.3%
Black	273	18.3%	26.0%	31.1%	16.5%	8.1%	408	13.7%	29.7%	21.6%	21.8%	13.2%
Hispanic	178	23.6%	21.9%	27.0%	14.0%	13.5%	268	19.0%	28.7%	16.0%	18.7%	17.5%
White	6734	6.3%	14.5%	26.3%	23.0%	29.9%	6566	4.2%	12.4%	17.4%	26.7%	39.3%
COFHE BY GENDER AND RACE												
Male Asian	170	15.9%	21.8%	28.2%	15.3%	18.8%	242	8.7%	18.2%	13.6%	24.8%	34.7%
Black	88	17.0%	29.5%	30.7%	13.6%	9.1%	145	17.2%	26.2%	18.6%	23.4%	14.5%
Hispanic	105	13.3%	29.5%	30.5%	12.4%	14.3%	119	21.8%	19.3%	18.5%	21.8%	18.5%
White	3122	6.0%	14.5%	27.6%	21.4%	30.5%	2795	3.5%	11.2%	17.9%	26.2%	41.3%
Female Asian	191	18.3%	24.1%	23.0%	17.3%	17.3%	412	8.7%	17.0%	19.4%	24..%	30.8%
Black	185	18.9%	24.3%	31.4%	17.8%	7.6%	263	11.8%	31.6%	23.2%	20.9%	12.5%
Hispanic	73	38.4%	11.0%	21.9%	16.4%	12.3%	149	16.8%	36.2%	14.1%	16.1%	16.8%
White	3612	6.6%	14.5%	25.2%	24.3%	29.3%	3771	4.6%	13.4%	17.1%	27.1%	37.8%

COMPARATIVE INCOME DISTRIBUTIONS												
NATIONAL INCOME DISTRIBUTION OF FAMILIES WITH HEADS AGED 45-64		26.8% (<17.5	26.5% 17.5-30)	29.6%	12.1%	5.0%		19.9%	27.3%	25.2%	----27.8%----	
AMERICAN FRESHMAN SURVEY DATA												
Income bands ($1,000s):		<20	20-30	30-50	---- >50 ----			< 20	20-40	40-60	60-100	> 100
all institutions:		29.7%	24.7%	31.1%	----14.6%----			15.9%	32.3%	24.6%	18.0%	9.3%
4-yr private, non-sectarian colleges:		25.7%	21.0%	29.2%	----24.2%----			13.0%	26.2%	22.0%	21.3%	17.6%
4-yr public colleges:		33.7%	25.5%	30.7%	----10.2%----			15.9%	33.0%	26.9%	18.6%	5.6%
private universities:		16.1%	16.4%	31.3%	----36.2%----			7.6%	19.5%	20.5%	25.8%	26.5%
public universities:		20.9%	21.9%	36.1%	----21.0%----			11.4%	27.3%	25.8%	23.2%	12.1%
ADMISSIONS TESTING PROGRAM DATA		26.8%	30.4%	28.4%	----14.2%----			16.8%	35.7%	24.9%	----22.7%----	

Appendix A

Table 3: Rates of Application, Admission, and Matriculation by Income Group from a 1976 Sample of High PSAT Students

	Low income	Lower-middle income	Middle income	Upper-middle income	High income	Total
Total sample - N	108	419	448	238	168	1381
COFHE applicants - N	21	93	112	87	98	411
application rate	19%	22%	25%	37%	58%	30%
COFHE admits - N	16	66	69	61	76	288
admission rate	76%	71%	62%	70%	78%	70%
COFHE matriculants - N	8	49	50	44	56	207
matriculation rate (yield)	50%	74%	72%	72%	74%	72%
Matriculation rate of total sample	7%	12%	11%	19%	33%	15%